

REMARKS

Applicants bring to Examiner's attention related co-pending application serial no. 09/837,102.

Applicants have cancelled claims 13 and 14. Claim 1 is amended. The amendment is supported by the specification and claims as originally filed, for example, at page 23 line 19 to page 24 line 23, page 32 lines 3-6 and pages 37 to 41. No new matter is added by the amendment. Claims 1-5, 21-23 and 28 remain in the application.

Claims 1-5, 13-14, 21-23 and 28 are rejected under 35 U.S.C. §112, second paragraph as being indefinite. Applicants traverse the rejection to the extent that it may be maintained. Claims 13-14 are cancelled.

Claim 1 is amended to clarify that fibers making up the nonwoven strip are bonded to themselves by thermal bonding at least a part of the fiber intersections. Claim 1 is also amended to clarify that a strip of filament nonwoven forms a filtration layer comprising a first filtration layer and a second filtration layer. Applicants respectfully submit that claim 1 as amended is clear to a person of ordinary skill. Examiner is requested to withdraw the rejection on this ground.

Claims 1-5 and 28 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP 5-2715 in view of EP 313,920. Applicants traverse the rejection to the extent that it may be maintained.

Claim 1 now recites that bonding is by thermal bonding. Further, the second filtration layer, discussed at page 39 and Fig. 6, comprises a filament nonwoven. By definition, a filament fiber is a fiber of indefinite length whereas a staple fiber is a short fiber of predetermined length. The nonwoven of JP 5-2715 is prepared by carding split staple fibers divided from dividable composite fibers. Accordingly, they are not a filament fiber but a staple fiber. The filter disclosed in JP 5-2715 is almost the same as the filter disclosed in JP-A 4-45810 discussed at page 6 line 20 to page 7 line 9. The filter described at page 6 is inferior in strength so that the

filter is liable to be deformed during use or the void rate varies so that liquid permeability is reduced. The nonwoven of JP 5-2715 is not a filament nonwoven having thermal bonded fiber whereas the filament nonwoven of the claimed filter has thermal bonding of at least at a part of the fiber intersections.

EP 313,920 does not provide the necessary teaching to remedy the deficiencies in JP 5-2715. Note that JP-A 1-115,423, discussed beginning at page 5 line 24, is the parent application to the '920 application. As explained, the filter according to '423, and therefore '920, is inferior in filter strength, filtering accuracy, liquid permeability, filter life and the like due to swelling of cellulose fiber prepared from extruded, molten pulp (Also, page 24 lines 11-23). Bonding of fibers disclosed in '920 is by heat treatment of chemically processed fibers ('920 description of cellulose-spanbond (sic) nonwoven cloth). Although, '920 may suggest winding a filter media in twill form, '920 does not teach or suggest a filament nonwoven or thermal bonding of at least at a part of the fiber intersections. The combined teaching of JP 5-2715 and EP 313,920 do not teach or suggest all of the limitations of claim 1.

Examiner asserts that the difference in trapped particle diameter between the second and first filtration layer is merely optimization of results. Applicants respectfully disagree. The recitation of trapped particle diameter defines a structural distinction between the first and second filtration layers. Selection of a particular ratio of trapped particle diameters for the first and second filtration layers may be an optimized choice within the range of the claimed ratio, but that is not the same as saying that defining the structural difference between the first and second filtration layers in terms of trapped particle diameter is an optimizing choice. There is no teaching or suggestion from the references that performance of a filter cartridge is optimized by a filtration layer comprising a first filtration layer and a second filtration layer, the second filtration layer comprising a filament nonwoven having an initial 80% trapped particle diameter that is 0.05 to 0.9 times as large as an initial 80% trapped particle diameter in the first filtration layer. The uniformly superior performance of filter cartridges according to the claimed invention with respect to liquid permeability, filter life and stability in filtering accuracy, as summarized by the Examples, demonstrates that the Applicants filter cartridge is more than an optimized version of the prior art.

Applicants respectfully submit that claim 1 is allowable over JP 5-2715 in view of EP 313,920, request Examiner to withdraw the rejection on this ground.

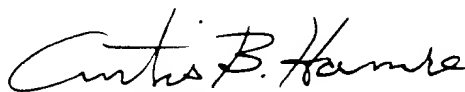
Claims 2-5, 21-23 and 28 depend directly or indirectly from claim 1. Claims depending from an allowable claim are likewise allowable. With respect to the rejection of claims 21 and 22 as obvious over JP 5-2715 in view of EP 313,920 and EP 466,381, Applicants respectfully submit that figures 2 and 3 of JP 5-2715 disclosed a split type (dividable) multicomponent fiber and not a thermally adherent composite fiber. The multicomponent fiber comprises at least two kinds of resin as separated portions continuous in a lengthwise direction. When split type fiber is given an impact, e.g., by a high pressure water flow, the fiber is divided at the interface of the of the different kinds of resin into several extremely fine fibers. There is no teaching or suggestion that the split type fiber of JP 5-2715 is a thermally adherent composite fiber. Applicants respectfully submit that claims 2-5, 21-23 and 28 are allowable and request the rejection of these claims be withdrawn.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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